



May 3, 2022

Ms. Jamie-Bernard-Drakey
EPA Kansas Site Assessment Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

**Subject: Quality Assurance Project Plan for Preliminary Assessments of Garden City Dry
Cleaner Sites, Garden City, Kansas
EPA SEMS Identification Nos. KSN000720854, KSN000720857, KSN000720858,
KSN000720859, KSN000720860
U.S. EPA Region 7, START 5, Contract No. 68HE0719D0001
Task Order No. 19F0065.005
Task Monitor: Jamie Bernard-Drakey, EPA Kansas Site Assessment Manager**

Dear Ms. Bernard-Drakey:

Tetra Tech, Inc. (Tetra Tech) submits the attached Quality Assurance Project Plan (QAPP) for Preliminary Assessments of Five Garden City Dry Cleaner sites in Garden City, Kansas. If you have any questions or comments, please contact the Project Manager at (816) 412-1771.

Sincerely,

A handwritten signature in black ink that reads 'Jenna Mead'.

Jenna Mead, RG
START Project Manager

A handwritten signature in blue ink that reads 'Ted Faile'.

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Kirk Mammoliti, On-scene Coordinator

QUALITY ASSURANCE PROJECT PLAN
PRELIMINARY ASSESSMENTS OF GARDEN CITY DRY CLEANER SITES
GARDEN CITY, KANSAS
EPA SEMS ID - KSN000720854, KSN000720857, KSN000720858, KSN000720859, KSN000720860

Superfund Technical Assessment and Response Team (START) 5 Contract
Contract No. 68HE0719D0001, Task Order 19F0065.005

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
11201 Renner Boulevard
Lenexa, Kansas 66219

May 3, 2022

Prepared By:

Tetra Tech, Inc.
415 Oak Street
Kansas City, Missouri 64106
(816) 412-1741

RECEIVED 05/10/2022
2022102

CONTENTS

| <u>Section/Table</u> | <u>Page</u> |
|---|-------------|
| QUALITY ASSURANCE PROJECT PLAN FORM..... | 1 |
| TABLE 1: SAMPLE SUMMARY | 6 |
| TABLE 2: DATA QUALITY OBJECTIVE SUMMARY | 7 |

APPENDICES

Appendix

- A SITE-SPECIFIC INFORMATION REGARDING PRELIMINARY ASSESSMENTS OF
GARDEN CITY DRY CLEANER SITES, GARDEN CITY, KANSAS
- B FIGURES
- C SITE-SPECIFIC DATA MANAGEMENT PLAN

| Region 7 Superfund Program Addendum for the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2017) for Preliminary Assessments of Garden City Dry Cleaner Sites | | | |
|--|--|--|---|
| Project Information: | | | |
| Site Name: Preliminary Assessments of Garden City Dry Cleaner Sites | | City: Garden City | State: Kansas |
| EPA Project Manager: Jamie Bernard-Drakey | | START Project Manager: Jenna Mead | |
| Approved By: | Title: START Project Manager Date: 05/03/2022 | | Prepared For: EPA Region 7 Superfund Division |
| Approved By: | Title: START Program Manager Date: 05/03/2022 | | |
| Approved By: | <small>Digitally signed by Heather Wood Date: 2022.05.03 14:12:35 -05'00'</small> Title: START Quality Assurance (QA) Manager Date: | | Prepared By: Jenna Mead Date: April 2022 |
| Approved By: | <small>Digitally signed by JAMIE BERNARD-DRAKEY Date: 2022.06.01 12:51:13 -05'00'</small> Title: EPA Project Manager Date: | | |
| Approved By: | <small>Digitally signed by DIANE HARRIS Date: 2022.06.02 15:31:26 -05'00'</small> Title: EPA Regional QA Manager Date: | | Tetra Tech START Project Number: X9030.19F.0065.005 |
| approved w/condition | | | |
| 1.0 Project Management: | | | |
| 1.1 Distribution List: EPA—Region 7: Jamie Bernard-Drakey, EPA Project Manager START: Jenna Mead, Project Manager Diane Harris, Region 7 QA Manager Heather Wood, QA Manager | | | |
| 1.2 Project/Task Organization: Jamie Bernard-Drakey of the EPA Region 7 Superfund Division will serve as the EPA Project Manager for the activities described in this Quality Assurance Project Plan (QAPP). Jenna Mead of Tetra Tech, Inc., (Tetra Tech) will serve as the START Project Manager | | | |
| 1.3 Problem Definition/Background: Description: This site-specific QAPP form is prepared as an addendum to the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment (TBA) Programs (October 2017) , and specifies site-specific data quality objectives for the sampling activities described herein. <input checked="" type="checkbox"/> Description attached. <input type="checkbox"/> Description in referenced report: _____ <div style="text-align: center; margin-top: 10px;"> Title Date </div> | | | |
| 1.4 Project/Task Description: <input checked="" type="checkbox"/> Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Preliminary Assessment (PA) <input type="checkbox"/> CERCLA Site Investigation (SI) <input type="checkbox"/> Brownfields Assessment <input type="checkbox"/> Other (description attached) <input type="checkbox"/> Pre-CERCLA Site Screening <input type="checkbox"/> Removal Assessment Schedule: Field work is scheduled for June 2022. <input type="checkbox"/> Description in referenced report: _____ <div style="text-align: center; margin-top: 10px;"> Title Date </div> | | | |

| Region 7 Superfund Program Addendum for the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2017) for Preliminary Assessments of Garden City Dry Cleaner Sites | | | |
|---|---|----------------------|-----------------|
| 1.5 Quality Objectives and Criteria for Measurement Data: | | | |
| Accuracy: | <input checked="" type="checkbox"/> Identified in attached table. | | |
| Precision: | <input checked="" type="checkbox"/> Identified in attached table. | | |
| Representativeness: | <input checked="" type="checkbox"/> Identified in attached table. | | |
| Completeness*: | <input checked="" type="checkbox"/> Identified in attached table. | | |
| Comparability: | <input checked="" type="checkbox"/> Identified in attached table. | | |
| Other Description: *A completeness goal of 100 percent has been established for this project. However, if the completeness goal is not met, EPA may still be able to make site decisions based on any or all the remaining validated data. | | | |
| 1.6 Special Training/Certification Requirements: | | | |
| <input checked="" type="checkbox"/> Occupational Safety and Health Administration (OSHA) 1910 <input checked="" type="checkbox"/> Special Equipment/Instrument Operator: Sampling personnel will be experienced in collection of environmental samples (soil and groundwater). An experienced and licensed operator will conduct direct-push technology (DPT) operations. <input type="checkbox"/> Other (describe below): | | | |
| 1.7 Documentation and Records: | | | |
| <input checked="" type="checkbox"/> Field Sheets <input checked="" type="checkbox"/> Site Log <input checked="" type="checkbox"/> Trip Report <input checked="" type="checkbox"/> Site Maps <input type="checkbox"/> Video <input checked="" type="checkbox"/> Chain of Custody <input checked="" type="checkbox"/> Health and Safety Plan <input type="checkbox"/> Letter Report <input checked="" type="checkbox"/> Photos | | | |
| <input checked="" type="checkbox"/> Sample documentation will follow EPA Region 7 Standard Operating Procedure (SOP) 2420.05. <input checked="" type="checkbox"/> A copy of this QAPP and any future amendments will be available to all personnel throughout sampling activities. EPA will maintain original documents. <input checked="" type="checkbox"/> Other: Analytical information will be handled according to procedures identified in Table 2. | | | |
| 2.0 Measurement and Data Acquisition: | | | |
| 2.1 Sampling Process Design: | | | |
| <input type="checkbox"/> Random Sampling <input type="checkbox"/> Transect Sampling <input checked="" type="checkbox"/> Biased/Judgmental Sampling <input type="checkbox"/> Stratified Random Sampling <input type="checkbox"/> Search Sampling <input type="checkbox"/> Systematic Grid <input type="checkbox"/> Systematic Random Sampling <input checked="" type="checkbox"/> Definitive Sampling <input type="checkbox"/> Screening w/o Definitive Confirmation <input type="checkbox"/> Screening w/ Definitive Confirmation <input checked="" type="checkbox"/> Sample Map(s) Attached | | | |
| The proposed scheme for groundwater sampling from Geoprobe® DPT temporary wells will be biased/judgmental, with definitive laboratory analysis, in accordance with procedures included in the Guidance for Performing Site Inspections Under CERCLA, Office of Solid Waste and Emergency Response (OSWER) Directive #9345.1-05, September 1992; and Removal Program Representative Sampling Guidance, Volume 1: Soil, OSWER Directive 9360.4-10, November 1991. All samples will be submitted for analysis by the EPA Region 7 laboratory. See Appendices A and B for additional site-specific information and maps. The proposed number of samples is a balance between cost and coverage, and represents a reasonable attempt to meet the study objectives while staying within the budget constraints of a typical site investigation. | | | |
| Sample Summary Location | Matrix | # of Samples* | Analysis |
| DPT Temporary Wells | Groundwater | 5-10 | VOCs |
| DPT Soil Gas | Air | 20 | VOCs |
| * Quality control (QC) samples are not included with these totals. See Table 1 for a complete sample summary. | | | |

| Region 7 Superfund Program Addendum for the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2017) for Preliminary Assessments of Garden City Dry Cleaner Sites | | |
|--|---|------------------------------|
| 2.2 Sample Methods Requirements: | | |
| Matrix | Sampling Method | EPA SOP(s)/Methods |
| Groundwater (DPT temporary wells) | At temporary wells installed by use of a DPT apparatus, groundwater samples will be collected through disposable polyethylene tubing fitted with a check valve that will be inserted into a Screen Point 16 sampling apparatus containing a disposable polyvinyl chloride (PVC) or reusable stainless-steel screen. | EPA SOPs 4230.07 & 4231.2007 |
| Soil-gas (Vadose) | Soil-gas samples will be collected by use of a Geoprobe® that will drive steel rods to the sampling depth. Evacuated stainless steel Summa® canisters will be used to collect the soil-gas samples for analysis for VOCs. | SOPs 4230.07 & 4231.2042 |
| 2.3 Sample Handling and Custody Requirements: | | |
| <input checked="" type="checkbox"/> Samples will be packaged and preserved in accordance with procedures defined in Region 7 EPA SOP 2420.06. If shipment of samples by commercial service is required, each cooler lid will be securely taped shut, and two custody seals will be signed, dated, and placed across the lid opening. Samples will be submitted to the laboratory in a time-efficient manner to ensure no exceedances of applicable holding times. <input checked="" type="checkbox"/> Chain of custody (COC) will be maintained as directed by Region 7 EPA SOP 2420.04. <input type="checkbox"/> COC will be maintained as directed by Tetra Tech SOP 019 (Revision 7), Packaging and Shipping Samples, as well as any additional contract requirements. <input checked="" type="checkbox"/> Samples will be accepted according to Region 7 EPA SOP 2420.01. <input type="checkbox"/> Other (Describe): | | |
| 2.4 Analytical Methods Requirements: | | |
| <input checked="" type="checkbox"/> Identified in attached table. <input type="checkbox"/> Identified in attached Work Order (WO) Request Form <input type="checkbox"/> Other (Describe): | | |
| 2.5 Quality Control Requirements: | | |
| <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Identified in attached table. <input checked="" type="checkbox"/> In accordance with the Generic QAPP for the Superfund Site Assessment and TBA Programs (October 2017) . <input checked="" type="checkbox"/> Describe Field QC Samples to be collected: For this investigation, field QC samples will include one field blank and one equipment rinsate blank (if groundwater is collected). The field blank will be collected to evaluate contamination of sampling containers and/or preservatives, and to assess contamination potentially introduced during sampling and laboratory procedure(s). The equipment rinsate blank will evaluate effectiveness of decontamination procedures for Geoprobe groundwater sampling equipment. In addition, one trip blank will be prepared by the EPA Region 7 laboratory to assess contamination potentially introduced during transportation of the groundwater containers/samples. If no groundwater samples are collected, trip blank and equipment blank samples will not be submitted. The blank samples will be submitted for the analyses listed in the attached tables. Evaluation of blank samples to determine whether the environmental samples are representative depends on the levels of contamination found in environmental samples. The EPA Project Manager and EPA contractor(s) will evaluate analytical results from blank samples qualitatively for a general indication of field-introduced and/or lab-introduced contamination. <input type="checkbox"/> Other (Describe): | | |
| 2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements: | | |
| <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> In accordance with the Generic QAPP for the Superfund Site Assessment and TBA Programs (October 2017) . <input checked="" type="checkbox"/> Other (Describe): Testing, inspection, and maintenance of field instruments (photoionization detector [PID]) will comply with manufacturers' recommendations. Testing, inspection, and maintenance of analytical instrumentation will comply with EPA Region 7 SOPs and manufacturers' recommendations. | | |

| Region 7 Superfund Program Addendum for the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2017) for Preliminary Assessments of Garden City Dry Cleaner Sites | |
|--|---|
| 2.7 | Instrument Calibration and Frequency: <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> In accordance with the Generic QAPP for the Superfund Site Assessment and TBA Programs (October 2017) . <input checked="" type="checkbox"/> Calibration of laboratory equipment will be performed as described in the EPA Region 7 SOPs and/or manufacturers' recommendations. <input checked="" type="checkbox"/> Other (Describe): Calibration of field instruments will occur daily, as described in the manufacturers' recommendations. |
| 2.8 | Inspection/Acceptance Requirements for Supplies and Consumables: <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> In accordance with the Generic QAPP for the Superfund Site Assessment and TBA Programs (October 2017) . <input checked="" type="checkbox"/> All sample containers will meet EPA criteria for cleaning procedures for low-level chemical analysis. The manufacturer will provide sample containers with Level II certifications in accordance with pre-cleaning criteria established by EPA in <i>Specifications and Guidelines for Obtaining Contaminant-Free Containers</i> . <input type="checkbox"/> Other (Describe): |
| 2.9 | Data Acquisition Requirements <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> In accordance with the Generic QAPP for the Superfund Site Assessment and TBA Programs (October 2017) . <input checked="" type="checkbox"/> EPA and/or its contractor(s) have compiled from other sources data or information pertaining to the site (including other analytical data, reports, photos, maps, etc., that are referenced in this QAPP). Some of those data have not been verified by EPA and/or its contractor(s); however, EPA will not use that unverified information for decision-making purposes without verification by an independent professional qualified to verify such data or information. <input type="checkbox"/> Other (Describe): |
| 2.10 | Data Management: <input checked="" type="checkbox"/> All laboratory data acquired will be managed in accordance with Region 7 EPA SOP 2410.01. <input checked="" type="checkbox"/> Other (Describe): The START-subcontracted laboratory will manage all data acquired there in accordance with the laboratory's established procedures. <input checked="" type="checkbox"/> All data will be managed in accordance with the site-specific data management plan in Appendix C to this document. |
| 3.0 Assessment and Oversight: | |
| 3.1 | Assessment and Response Actions: <input checked="" type="checkbox"/> Peer Review <input checked="" type="checkbox"/> Management Review <input type="checkbox"/> Field Audit <input type="checkbox"/> Lab Audit <input checked="" type="checkbox"/> Assessment and response actions pertaining to analytical phases of the project are addressed in Region 7 EPA SOPs 2430.06 and 2430.12. <input type="checkbox"/> Other (Describe): |
| 3.1A | Corrective Action: <input checked="" type="checkbox"/> Corrective actions will be at the discretion of the EPA Project Manager whenever problems appear that could adversely affect data quality and/or resulting decisions affecting future response actions pertaining to the site. <input type="checkbox"/> Other (Describe): |

| Region 7 Superfund Program Addendum for the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2017) for Preliminary Assessments of Garden City Dry Cleaner Sites | | | |
|--|---|--|--|
| 3.2 Reports to Management: | | | |
| <input type="checkbox"/> Audit Report | <input type="checkbox"/> Data Validation Report | <input type="checkbox"/> Project Status Report | <input type="checkbox"/> None Required |
| <input checked="" type="checkbox"/> Tetra Tech START will prepare and submit to EPA a letter report describing sampling techniques, locations, problems encountered (with resolutions to those problems), and interpretation of analytical results. | | | |
| <input checked="" type="checkbox"/> Preparation of reports will accord with the Generic QAPP for the Superfund Site Assessment and TBA Programs (October 2017) . | | | |
| <input type="checkbox"/> Other (Describe): | | | |
| 4.0 Data Validation and Usability: | | | |
| 4.1 Data Review, Validation, and Verification Requirements: | | | |
| <input type="checkbox"/> Identified in attached table. | | | |
| <input checked="" type="checkbox"/> Data review and verification will accord with the Generic QAPP for Superfund Site Assessment and TBA Programs (October 2017) . | | | |
| <input checked="" type="checkbox"/> A qualified analyst and the EPA Region 7 laboratory's Section Manager will conduct data review and verification of analytical results generated by that laboratory, as described in Region 7 EPA SOPs 2430.12 and 2410.10. | | | |
| <input type="checkbox"/> Other (Describe): | | | |
| 4.2 Validation and Verification Methods: | | | |
| <input type="checkbox"/> Identified in attached table. | | | |
| <input checked="" type="checkbox"/> The data will be validated in accordance with Region 7 EPA SOPs 2430.12, 2410.10. | | | |
| <input checked="" type="checkbox"/> The EPA Project Manager will inspect the data to provide a final review. The EPA Project Manager will review the data, if applicable, for laboratory spikes and duplicates, laboratory blanks, and field QC samples to ensure that they are acceptable. The EPA Project Manager will also compare the sample descriptions with the field sheets for consistency, and will ensure appropriate documentation of any anomalies in the data. | | | |
| <input type="checkbox"/> Other (Describe): | | | |
| 4.3 Reconciliation with User Requirements: | | | |
| <input type="checkbox"/> Identified in attached table: | | | |
| <input checked="" type="checkbox"/> If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded, and re-sampling or re-analysis of the subject samples may be required by the EPA Project Manager. | | | |
| <input type="checkbox"/> Other (Describe): | | | |

Region 7 Superfund Program
Addendum for the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2017)
for Preliminary Assessments of Garden City Dry Cleaner Sites

Table 1: Sample Summary

| Site Name: Preliminary Assessments of Garden City Dry Cleaner Sites | | | | Location: Garden City, Kansas | | | |
|--|-------------------|---|--|---|--------------------|------------------------------|-----------------------|
| START Project Manager: Jenna Mead | | | | Activity/WO #: To be determined | | Date: April 2022 | |
| No. of Samples | Matrix | Location | Purpose | Depth or Other Descriptor | Requested Analysis | Sampling Method | Analytical Method/SOP |
| 5-10 (1 or 2 per site) | Water | DPT temporary monitoring wells | To determine whether a release to groundwater has occurred | Groundwater will be sampled within 66-70 feet below ground surface (bgs), if encountered. | VOCs | EPA SOPs 4230.07 & 4231.2007 | EPA SOP 3230.13 |
| 20 | Soil-Gas (Vadose) | Near site | To assess impact on human health from site contaminants through vapor intrusion | To be collected at about 8 feet below ground surface (bgs) | VOCs | EPA SOP 4230.07 & 4231.2042 | EPA SOP 3230.04 |
| QC SAMPLES | | | | | | | |
| 1 | Water | Field blank (if groundwater is collected) | To assess field/laboratory-related contamination | Not applicable (NA) | VOCs | NA | EPA SOP 3230.13 |
| 1 | Water | Equipment rinsate blank (if groundwater is collected) | To assess effectiveness of decontamination of DPT groundwater sampling equipment | NA | VOCs | NA | EPA SOP 3230.13 |
| 1 | Water | Trip blank (if groundwater is collected) | To assess transportation-related contamination | NA | VOCs | NA | EPA SOP 3230.13 |

| Region 7 Superfund Program Addendum for the Generic QAPP for the Superfund Site Assessment and Targeted Brownfields Assessment Programs (October 2017) for Preliminary Assessments of Garden City Dry Cleaner Sites | | | | | | | | |
|---|-------------------|---------------------------|-----------------------|--|--|---|-------------------------------|--------------------------------|
| Table 2: Data Quality Objective Summary | | | | | | | | |
| Site Name: Preliminary Assessments of Garden City Dry Cleaner Sites | | | | Location: Garden City, Kansas | | | | |
| START Project Manager: Jenna Mead | | | | Activity/WO #: To be determined | | | Date: April 2022 | |
| Analysis | Analytical Method | Data Quality Measurements | | | | | Sample Handling Procedures | Data Management Procedures |
| | | Accuracy | Precision | Representativeness | Completeness | Comparability | | |
| Groundwater | | | | | | | | |
| VOCs | See Table 1 | Per analytical method | Per analytical method | Biased/judgmental sampling based on professional judgment of the sampling team | 100%; no critical samples have been defined | Standardized procedures for sample collection and analysis will be used | See Section 2.3 of QAPP | See Section 2.10 of QAPP form |
| Soil-Gas | | | | | | | | |
| VOCs | See Table 1 | Per analytical method | Per analytical method | Biased/judgmental sampling based on professional judgment of the sampling team | 100%; no critical samples have been identified | Standardized procedures for sample collection and analysis will be used | See Section 2.3 of QAPP form. | See Section 2.10 of QAPP form. |

APPENDIX A

**SITE-SPECIFIC INFORMATION REGARDING PRELIMINARY ASSESSMENTS OF
GARDEN CITY DRY CLEANER SITES,
GARDEN CITY, KANSAS**

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division tasked the Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START), under contract number 68HE0719D0001, to conduct Preliminary Assessments (PA) of five current or former dry cleaners at the Garden City Dry Cleaner sites (the sites) in the City of Garden City, Kansas (the City). Based on the long history of dry cleaning operations, Pre-Comprehensive Environmental Response, Compensation, and Liability Act (Pre-CERCLA) Screening Assessments (PCS) determined that releases of volatile organic compounds (VOC) (probably chlorinated solvents) may have occurred to surface soil and groundwater at each of the five Garden City sites (Tetra Tech 2021). The purpose of this PA is to determine whether any threats to human health or the environment exist as a result of releases to soil and/or groundwater from these former dry cleaners. These PAs will proceed under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Assessment activities will accord with EPA *Guidance for Performing Preliminary Assessments Under CERCLA* (EPA 1991).

PA tasks will include:

- Collection of groundwater samples from direct-push technology (DPT) temporary wells at or near the current or former dry-cleaning facilities. An attempt will be made to sample groundwater at each of the five sites during a combined field sampling event. Because of the depth to groundwater and presence of caliche beds in Garden City, groundwater sampling may prove unsuccessful.
- Collection of soil-gas samples via DPT sampling from four locations at or near the current or former dry-cleaning facilities.

Obtain and document Global Positioning System (GPS) coordinates at all sample locations.

- Preparation of a separate PA report for each of the five sites.

This Quality Assurance Project Plan (QAPP) identifies site-specific features and addresses elements of the sampling strategy and analytical methods proposed for the investigation. Analytical results will be compared to EPA Superfund Chemical Data Matrix (SCDM) values, Regional Screening Levels (RSL), Maximum Contaminant Levels (MCL) and background concentrations to determine whether further Superfund response is warranted.

SITE BACKGROUND INFORMATION

This section presents information regarding locations of the sites, describes current site conditions and histories of the sites, and conveys the scope of work for this investigation. Site locations appear on Figures 1 and 2 in Appendix B.

Site Location/Description

Garden City is on the north bank of the Arkansas River in Finney County, Kansas (see Appendix B, Figure 1), and according to the 2020 census, had a population of 28,151 (U.S. Census Bureau 2022). The City is in southwestern Kansas within the High Plains Physiographic Province, about 60 miles north of Oklahoma and east of Colorado. Elevations in the City generally range from about 2,830 feet above mean sea level (AMSL) at the east to 2,850 feet AMSL at the west, and continue to increase proceeding farther west into the High Plains. Sandhills are present south of the Arkansas River, with elevations rising to about 2,900 feet AMSL. Most of downtown Garden City is within Sections 4 through 9 and 15 through 19 in Township 24 South (T24S), Range 32 West (R32W) and Sections 12 and 13 of T24S, R33W. The City appears on the 7.5-minute topographic quadrangle maps of East and West Garden City, Kansas (U.S. Geological Survey [USGS] 1983a, b). The Garden City Public Water Supply (PWS) provides potable water to the population; however, most of those residing outside of city limits obtain their water from community PWS systems, such as those for subdivisions and mobile home parks, Finney County Rural Water District (RWD) 1, or private domestic wells. Wheatfield Electric Cooperative (Wheatfield) PWS wells also provide water to Garden City and other PWSs. Two of Wheatfield's 18 wells are within Garden City (*The Kansas Life* 2018, Finney County RWD 1 2020). PWS wells are generally producing groundwater from the High Plain (Ogallala) Aquifer or the Dakota (Maha) Aquifer, and are much deeper than private wells.

Waste Characteristics

The common dry-cleaning solvent tetrachloroethene (PCE) was not used in the United States until 1934; however, petroleum solvents and carbon tetrachloride were in use as dry-cleaning solvents in the early 1900s. By 1948, PCE had replaced carbon tetrachloride as the major chlorinated dry cleaning solvent used in the United States (petroleum solvents still dominated overall). By 1962, dry cleaning operations accounted for 90 percent of the PCE used in the United States (State Coalition for Remediation of Drycleaners [SCRD] 2007). PCE degrades to trichloroethene (TCE). PCE has low to moderate mobility in soil and may leach slowly to groundwater. Its solubility in groundwater is slight (0.15 grams per liter) at 25 degrees Celsius (°C), and its specific gravity is 1.62 (Agency for Toxic Substances and Disease

Registry [ATSDR] 2019a). PCE tends to accumulate at greater depths with increasing distance from the source area.

Many dry cleaning operations during the early-late 1900s used TCE, a chlorinated solvent that quickly evaporates in air and has a sweet odor. In addition to dry cleaning, TCE is used as a degreaser for metal parts and as a precursor chemical in industry. TCE was introduced as a dry cleaning solvent in the United States in 1930 (SCRD 2007). TCE degrades to the *cis* and *trans* isomers of 1,2-dichloroethene (DCE), and to 1,1-DCE. These daughter products eventually degrade to vinyl chloride. TCE has low to moderate mobility in soil and may leach slowly to groundwater. Its solubility in groundwater is low (1 gram per liter at 25 °C), and its specific gravity is 1.46 (ATSDR 2019b). TCE tends to accumulate at greater depths with increasing distance from the source area.

Geology/Hydrogeology

Garden City is on the north bank of the Arkansas River in central Finney County, Kansas. The Kansas geological map of the area indicates presence of Quaternary-aged (late Pleistocene and Holocene) alluvium along the Arkansas River, and most of Garden City overlies the alluvial aquifer. Sandhills (Quaternary dune sand) are south of the alluvial valley, and the High Plains tableland (Quaternary loess) is to the north—both overlying alluvial deposits and/or the Tertiary Ogallala Formation (Kansas Geological Survey [KGS] 2021a). The loess (windblown silt) is generally about 10-30 feet thick and overlies calcareous silt, sand, and gravel of the Ogallala Formation (U.S. Department of Agriculture [USDA] 1965). Older Cretaceous-aged rocks including the Niobrara Chalk, Carlile Shale, Greenhorn Limestone, and Graneros Shale outcrop in some of the deeper valleys in the County.

The alluvial deposits and the Ogallala Formation are part of the High Plains Aquifer, the principal aquifer of the County. Groundwater flow in the shallow alluvial aquifer generally is toward and with the river's flow to the east-southeast. Groundwater flow in the Ogallala Aquifer is generally east or east-southeast. The Cretaceous rocks of the Dakota Formation, Kiowa Formation, and Cheyenne Sandstone, which underlie the Graneros Shale, form the Dakota Aquifer—also called the Maha Aquifer—of the Great Plains Aquifer System. Groundwater flow in the Dakota Aquifer is northeast toward its discharge area in north-central Kansas (KGS 2014). Pumping wells may influence local groundwater flow directions.

The City is situated on soils classified as the Las clay loam that develop on loamy alluvium over sandy and gravelly alluvium. These are deep to moderately deep soils having 0- to 1-percent slope that are occasionally flooded. Most soils south of the Arkansas River have developed on eolian sands; north of the City, soils have developed on loess (USDA 2021).

The KGS registered water wells interactive map indicates that some domestic or domestic lawn and garden wells are located within the City. Domestic wells in the City appear to be about 150-350 feet deep, and domestic lawn and garden wells are generally less than 150 feet deep; static water levels (SWL) are between about 40 and 85 feet below ground surface (bgs). Monitoring wells appear to range from about 39 to 70 feet bgs, and have SWLs of about 31 to 55 feet bgs (KGS 2021b). Kansas water well completion records for shallow aquifer monitoring wells in the City dating from about 2015-2020 were reviewed to estimate current depth to groundwater. Many of these wells were drilled to 70 feet bgs, and screened from 60-70 feet bgs. Groundwater was generally encountered during drilling at between about 46 and 50 feet bgs. SWLs were about 44 feet bgs.

Drillers' logs indicate that 0-15 feet of clay may overlie alluvial sands, silts, and gravels to about 40 to 60 feet bgs, where silty or sandy clay occurs. Some caliche beds also have been reported in the deeper sandy to silty clay around 60-70 feet bgs (KGS 2021b). According to documents available through the Kansas Department of Health and Environment (KDHE) Environmental Interest Finder website, some monitoring wells have been decommissioned and replaced with deeper wells because water levels had dropped below their screened intervals (KDHE 2022). Information provided in a 2005 KDHE interoffice memorandum for the nearby Garden City VOC site indicate that alluvial deposits are present to about 50-60 feet bgs where undifferentiated Pleistocene and Ogallala deposits were encountered. These deeper deposits reportedly have increased amounts of groundwater (KDHE 2022).

Well records indicate that several domestic or domestic lawn and garden wells may be within about 0.5 mile of a current or former dry cleaning facility; however, the well records may not have provided sufficient accuracy to correctly identify their locations. In addition, private wells inside the City may no longer be in service. SWLs of these wells ranged from about 22 to 65 feet bgs, and well depths ranged between 65 and 250 feet bgs. Notably, older SWLs may not represent current conditions due to aquifer depletion or drought causing water levels to drop.

The City of Garden City PWS provides 68 percent of the water supplied to a population of 26,408 from groundwater supplied by 12 active wells (five wells are inactive). The remaining 32 percent is from groundwater purchased from the Wheatland Electric Cooperative (Kansas Drinking Water Watch 2021). Seven of the Garden City PWS wells are in the sandhills south of the City. Five active and five inactive wells are inside city limits. Three wells are listed as inactive/emergency wells, and two are listed as inactive/non-PWS (Kansas Drinking Water Watch 2021). Three wells (including one inactive/emergency well) produce groundwater from sandstones of the Cretaceous Dakota Aquifer, and the other 14 wells produce groundwater from the Ogallala sands and gravels of the High Plains Aquifer. A driller's log for a

1984 PWS well in the central portion of the City describes alternating sands and clays to about 270 feet bgs, then Cretaceous clays/shales, and then limestones to total depth of 660 feet bgs. It notes that groundwater is produced from the Dakota sandstone at 560-657 feet bgs, and specifies an SWL of 122 feet bgs. In contrast, High Plains Aquifer PWS wells are generally about 300-350 feet bgs, but have similar SWLs of 120 feet bgs (KGS 2021b).

Numerous oil and gas wells are in the Garden City area. Gas wells generally produce from the Permian Chase Group at depths of about 2,500 feet bgs, while oil production well depths appear to have total depths of about 4,500 to 5,000 feet bgs and terminate in Pennsylvanian and Mississippian rocks (KGS 2021c).

PREVIOUS KANSAS DRY CLEANER INVESTIGATIONS IN GARDEN CITY

The KDHE Environmental Interest Finder Map for Garden City identified four dry cleaners in the Kansas Dry Cleaner Program. Three of these are currently active: Streeter Cleaners (628 N. 8th Street), Stroh Cleaners (2501 Fleming Street), and Garden City Specialty Cleaners (1808 E. Kansas Avenue). The fourth of these, Raleys Quality Cleaner (801 N. Main Street), has closed. Of these, only the Stroh Cleaners site is also on the Kansas Identified Site List (ISL).

Four sites on the Kansas ISL are former dry cleaners or are likely related to dry cleaners, and were excluded from the 2021 PCS (Tetra Tech 2021). In addition to Stroh Cleaners, these sites are Garden City Laundry (410 N. 8th Street), Penny/Stroh Cleaners (100 N. Main Street), and Garden City VOC site (likely related to dry cleaning at the former Garden City Uniform and Linen Rental). The 2021 PCS includes brief summaries of the investigations at these sites and PWS wells that had been impacted by contaminants (Tetra Tech 2021). Encounter with any groundwater contamination associated with these sites would be unlikely during sampling at the five Garden City Dry Cleaner sites to be investigated under this QAPP.

SELECTED DRY CLEANERS AND SITE HISTORY

A Kansas Dry Cleaner Inventory prepared by START in 2020 identified about 18 facilities in Garden City directories where dry cleaning operations likely had occurred (Tetra Tech 2020). START reviewed available information regarding these dry cleaning facilities, eliminated those investigated by KDHE, and selected five sites for a PCS. Selection of these five sites was based primarily on dry cleaners there having operated for at least a 10-year period between approximately 1950 and 2000. During that 50-year period, PCE was commonly used as a dry cleaning solvent, but regulations regarding proper disposal of

waste PCE were not in effect or facility owners might not have been fully familiar with regulatory compliance. Facilities known to use PCE, including coin-operated dry cleaning facilities, were included in the PCS even if they had operated for fewer than 10 years (Tetra Tech 2021).

The PCS included sites of two active dry cleaners and three former dry cleaners. The site names, addresses, GPS coordinates at the approximate centers of the respective sites, and known years of operation are listed in Table A-1. Figure 2 in Appendix B shows site locations. One of these buildings (801 N. Main Street) was demolished and replaced by a newer building and parking lot in about 2004.

TABLE A-1
FORMER DRY CLEANERS INCLUDED IN PCS
FIVE DRY CLEANER SITES – GARDEN CITY, KANSAS

| Site Name | EPA SEMS ID | Dry Cleaners | Latitude (Degrees North) | Longitude (Degrees West) | Years of Operation |
|--|--------------|--|-----------------------------|-----------------------------|-----------------------|
| Location #1: 110 W. Fulton St. | KSN000720854 | Former Acme Cleaners | 37.96557 | 100.87486 | 1946-1970 |
| Location #2: 801 N. Main St. | KSN000720857 | Former Cleaver Cleaners/Raley's Quality Cleaners | 37.97197 | 100.8728 | 1965-2001 |
| Location #3: 1808 E. Kansas Ave. | KSN000720860 | Garden City Specialty Cleaners | 37.97449 | 100.85005 | 1991-present |
| Location #4: 605 Kansas Plaza | KSN000720859 | Former Sterling Cleaning Center Norge Village | 37.97536 | 100.75495 | 1962-1971 |
| Location #5: 628 N. 8 th St. | KSN000720858 | Streeter Cleaners | 37.97164 | 100.8749 | 1955-present |

The following paragraphs summarize PCS findings from the sites listed in Table 1 (Tetra Tech 2021).

Location #1: 110 W. Fulton Street

Location 1 at 110 W. Fulton Street was the site of Acme Cleaners from about 1946 until 1970. This building has current or former addresses of 106, 108, 110, and 112 W. Fulton (see Figure 3, Appendix B). It is listed in the Downtown Garden City Historic Resources Survey as dating to 1935 and having hosted Elite Café, Acme Cleaners, and Ace High Barber Shop (Spencer Preservation 2011). A 1929-1950 Sanborn fire insurance map shows a restaurant at 106-108 W. Fulton (the east half of the building). The 112 address at the northwest corner of the building is shown as a small (about 12- by 25-foot) shop and was likely the barbershop. The 110 address, between the restaurant and the likely barbershop, is shown as a storefront shop measuring about 17 by 45 feet and extending west behind the 112 W. Fulton shop. A separate dry cleaning building (about 17 by 12 feet) is just south of the 110 address, where an addition

to the building at 119 N. Main Street later occurred (ProQuest, LLC 2021). Both properties are owned by the Finnup Foundation Trust at 119 N. Main Street (Finney County 2021). The Finnup Land Company previously owned the building at 119 N. Main Street and occupied one of the two storefront office spaces. Various advertisements from about 1970 include rentals for 106 or 110 W. Fulton and 119 N. Main with reference to contact at the Finnup Office at 119 N. Main, and suggest common ownership dates to at least the 1970s. The 106 W. Fulton address currently is listed as a Family Crisis Center, which appears to be the only building occupant. The closest residences are about 600 feet west (upgradient). The closest downgradient residences are about 800 feet east of the former dry cleaner. This site is about 800 feet southwest of PWS well #18, an emergency-use well. Three active wells and two additional inactive PWS wells are within 1 mile of the site. No previous investigations of this site have been identified; however, a 2005 memorandum from KDHE in the Garden City VOC site files mentions inclusion of Acme Cleaners in a 1997 investigation of dry cleaning sites regarding contamination in PWS wells #10 (north of downtown) and #18 (KDHE 2022).

Location #2: 801 N. Main Street

Location 2 at 801 N. Main Street is the site of a former building that hosted Cleaver Cleaners; this is not the current building at that address (see Figure 4, Appendix B). City directories listed Cleaver Cleaners, Raley's Cleaners, or Raley's Quality Cleaners at this address from 1965 until 2001. Newspaper archives indicate that Bob Cleaver previously had owned and operated Sally-Ed Cleaners at 401 N. 8th Street from 1952-1964, and changed the business name with construction of his new building. A 1961 advertisement for Bob Cleaver's Sally-Ed Cleaners cited use of "deodorized APCO 125" solvent at that time (NewspaperArchive 2021). APCO 125 is a petroleum solvent produced by Anderson-Prichard Oil Company. Cleaver's new dry cleaner plant at 801 N. Main Street opened in May 1965. About 1976, Mr. Cleaver retired, and Ray Raley (a Cleaver Cleaners employee) leased and later purchased the business that became Raley's Cleaners. Mr. Raley retired in 2001, and an auction of the Raley's Cleaners equipment occurred in April 2001. A Western Eagle Petroleum Dry Cleaning machine was listed among the items to be auctioned (NewspaperArchive 2021), but PCE could have been used in a machine not auctioned or as a spot cleaning agent.

Aerial photographs show the dry cleaner building near the southeast corner of the property, prior to its demolition in about 2003. The northern and central part of the current 1- and 2-story office complex at 801-805 N. Main Street dates to 1999, while the southern part (where the dry cleaner building formerly stood) dates to 2004. The property is owned by Greene Properties at 805 N. Main Street, Suite 2 (Finney County 2021). The closest residences are across the alley, about 100 feet west of the former dry cleaner.

The closest residences downgradient to the east are apartments about 200 feet northeast of the former facility.

Raley Quality Cleaners (801 N. Main Street) was registered with KDHE as a dry cleaner on March 23, 1998, and is listed as closed. This site is about 0.72 mile southwest of former PCE-contaminated Well #10, which has been decommissioned. Two active and three inactive PWS wells are within 1 mile of the site. No previous investigations of this site have been identified (KDHE 2022).

Location #3: 1808 E. Kansas Avenue

Location 3 at 1808 E. Kansas Avenue is the site of Garden City Specialty Cleaners, an active dry cleaner using PCE (see Figure 5, Appendix B). The facility opened in 1991 and has been owned and operated by Quang Nguyen and his wife Julie Banh since that date. December 1991 Grand Opening advertisements in the *Garden City Telegram* indicate the use of “Perc” as the dry cleaning agent (NewspaperArchive 2021). The facility owners also own the building, which was constructed in 1976 (Finney County 2021). Although use of the building prior to 1991 is unknown, commercial stores are believed to have occupied it.

The dry cleaner is in the western portion of the 6,480-square-foot strip shopping center. A Little Caesars Pizza shop is at the eastern end, and a tobacco shop is between. Several residential properties are across the alley, immediately south of this facility.

Garden City Specialty Cleaners was registered with KDHE as a dry cleaner on February 23, 1996, and is listed as active. Two PWS wells are within 1 mile southwest of this facility. No previous investigations of this site have been identified (KDHE 2022).

Location 4: 605 Kansas Plaza

Location 4 at 605 Kansas Plaza was the site of Sterling Cleaning Center/Norge Village, a laundromat and coin-operated dry cleaning facility that opened in about 1962 and closed in 1971 (see Figure 6, Appendix B). On November 8, 1971, the *Garden City Telegram* published an advertisement for an auction in the facility to occur on November 10, 1971; listed for auction were eight Norge commercial dry cleaners, two Norge sludge cookers, filtering systems, circulating pump, and 300 gallons of cleaning solvent for dry cleaners. The property now hosts an insurance agency. Tax assessor records indicate ownership of the property by the Mayra Marquez Agency LLC. The north (back) portion of the building has a 26- by 32-foot basement. A federally subsidized apartment complex (Pershing Manor) owned by

the City is across the alley immediately north of the former dry cleaner. Single-family homes are within 200 feet south of the site and about 300 feet northeast and northwest.

This site is about 0.4 mile south of former PWS Well #10, which contained PCE in the 1990s. Three active and one inactive/emergency PWS wells are within 1 mile of the former facility. No previous investigations of this site have been identified (KDHE 2022).

Location 5: 628 N. 8th Street

Location 5 at 628 N. 8th Street is the site of Streeter Cleaners, an active dry cleaner that has operated at this location since 1955 (see Figure 7, Appendix B). Streeter Cleaners operated at 602 or 616 N. 8th Street, in the same area, from about 1940 until 1955. The closest residential properties are immediately north of the facility, across an alley immediately east of the facility, and across N. 8th Street about 100 feet to the northwest.

Streeter Cleaners was registered with KDHE as a dry cleaner on February 23, 1998, and is listed as active. Lisa Harris is listed as the business owner, and Anthoney and Lisa Harris at the building address are listed as the property owners (Dun & Bradstreet 2021, Finney County 2021). This facility is about 0.8 mile southwest of the former Well #10. Three active and four inactive PWS wells (two for emergency use) are within 1 mile of the site. No previous investigations of this site have been identified (KDHE 2022).

Scope of Work

Tetra Tech START anticipates collecting two groundwater samples each from a maximum of 21 DPT temporary wells, with four or five DPT wells at each site. At each site, one background location, one location closest to the suspected source, and two downgradient (southeast or east-southeast) locations will be sampled. At Location #5, an extra DPT temporary well will be placed near the former dry cleaner location at 616 N. 8th Street, about 130 feet south of the current facility. Groundwater samples will be collected within City easements rather than at the current or former facilities. Samples will be analyzed for VOCs, including PCE and its degradation products. Proposed sample locations appear on Figures 3 through 7 in Appendix B.

SAMPLING STRATEGY AND METHODOLOGY

This section presents the sampling strategy and methodology to be applied. A Work Order (WO) request forms will be submitted to the EPA Region 7 laboratory for all five sites and sampling activities will occur during one field event.

Soil-gas Sampling

Soil-gas samples will be collected at four locations near each dry cleaner site to assess possible vapor intrusion into nearby buildings or residences. At each sampling location, steel rods will be driven to the sampling depth (8 feet bgs) by use of a DPT rig, the rods will be pulled back to provide a void space of approximately 6-inches, and disposable polyethylene tubing will be secured to the bottom of the rod string. Ambient air in the tubing will then be purged with a vacuum pump, and the upper end of the tubing will be connected to an evacuated Summa[®] canister. A valve on the canister will be opened, and the canister will be allowed to fill with soil-gas vapors. A pressure gauge will be used to determine the pressure in the Summa Canister before and after sample collection. Grab samples will be collected over about 30-60 seconds or until the final pressure is less than -5 inches of mercury. Figures 3-7 in Appendix B shows proposed sampling locations at each site. Samples will be analyzed for VOCs at the EPA Region 7 laboratory according to EPA Region 7 SOP 3230.04.

Temporary Well Sampling

SWLs in the area for more recent monitoring wells are reported at about 40-45 feet bgs; however, groundwater in these wells reportedly was encountered during drilling a few feet deeper at about 46-50 feet bgs. Most wells were screened from 60-70 feet bgs, suggesting that insufficient groundwater for well development and sampling may be present between 40-60 feet. The more abundant groundwater within the 60-70-foot interval may be occurring within the undifferentiated Pleistocene and Ogallala deposits, and the SWLs are likely a potentiometric surface. It is uncertain whether groundwater above 60 feet bgs will be sufficient to collect VOC samples. Additionally, DPT equipment refusal may occur above 70 feet bgs if caliche beds are present and cannot be penetrated.

An attempt will be made to collect at least one downgradient groundwater sample at each site and determine the top of groundwater. The boring will be advanced to 70 feet bgs or refusal, if less than 70 feet bgs. A groundwater sample will be collected within 66-70 feet bgs or sampling will be attempted for the 4-foot interval above the refusal depth. If groundwater is encountered and the top of groundwater appears to be 8 or more feet higher than the bottom sample collected, a second sample will be collected at top of groundwater. Sample depths may also be adjusted based on occurrence of groundwater at a site. If refusal is not encountered above 70 feet bgs, but groundwater is not present at that depth, deeper attempts (maximum of 100 feet bgs) may be made to collect groundwater.

Tetra Tech START will collect groundwater samples from temporary wells using a Geoprobe[®] Screen Point 16 sampling apparatus containing a 4-foot-long, reusable Geoprobe stainless steel screen. At each

location, the sampler will be advanced to total depth, and then the screen will be exposed to the aquifer. After deployment of the screen, approximately 1 liter of water will be purged through new disposable polyethylene tubing by use of a check valve placed at the bottom of the tubing prior to sample collection. If minimal groundwater is recovered, a grab sample may be collected without purging. After collection of the deeper sample, top of groundwater will be determined either by measuring with a slim-profile water level meter inside the pipe or by lifting the tubing and check valve assembly while purging to determine the approximate top of groundwater. After determining the approximate top of groundwater, the pipe string and screen can be lifted to top of groundwater and a second sample collected.

Samples for VOCs analyses will be collected in three 40-millimeter (mL) vials, each preserved with hydrochloric acid (HCl) to a pH <2. The groundwater sampler and rods will be decontaminated by use of a tap water and Alconox wash and tap water rinse following sampling at each location, and new tubing will be used at each location.

General Sampling Information

After collection, each sample will be labeled and packaged accordingly, and placed in a cooler maintained at or below a temperature of 4 degrees Celsius (°C) from time of collection until submittal to the EPA Region 7 laboratory for analysis.

After completion of sampling, all boreholes will be plugged with bentonite from bottoms of the holes to ground surface. Any disturbance to pavement material (concrete, asphalt, etc.) will be patched with similar material.

Sampling locations will be determined using a hand-held GPS having a horizontal accuracy of about 10 feet.

Quality Control Samples

Quality control (QC) samples for the PAs will include one field blank and one equipment rinsate blank for the combined sites. One trip blank per sample cooler will be submitted as specified in Section 2.5 of the QAPP form. Results from the field blank will be applied to all five sites and used to evaluate contamination of sampling containers and/or preservatives, and to assess contamination potentially introduced during sampling and laboratory procedure(s). Results from the equipment rinsate blank will be applied to all five sites and will be used to evaluate decontamination procedures applied to non-disposable sampling equipment. Results from the trip blank (one per cooler) will be used to assess

contamination potentially introduced during transportation of containers/samples. Results from field duplicates (one per site) will be used to assess precision of sampling and laboratory analysis.

ANALYTICAL METHODS

All samples will be submitted to the EPA Region 7 laboratory in Kansas City, Kansas, for analysis.

Water samples will be analyzed for VOCs. All samples will be analyzed according to standard operating procedures and methods referenced on the QAPP form. Standard detection limits and standard 30-day turnaround times are adequate for this project. Appropriate containers and physical/chemical preservation techniques will be applied during field activities to help verify acquisition of representative analytical results. The Tetra Tech START Project Manager will complete a WO Request form and submit it to the EPA Region 7 laboratory.

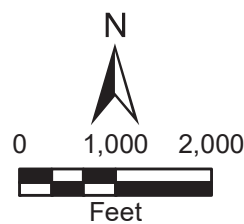
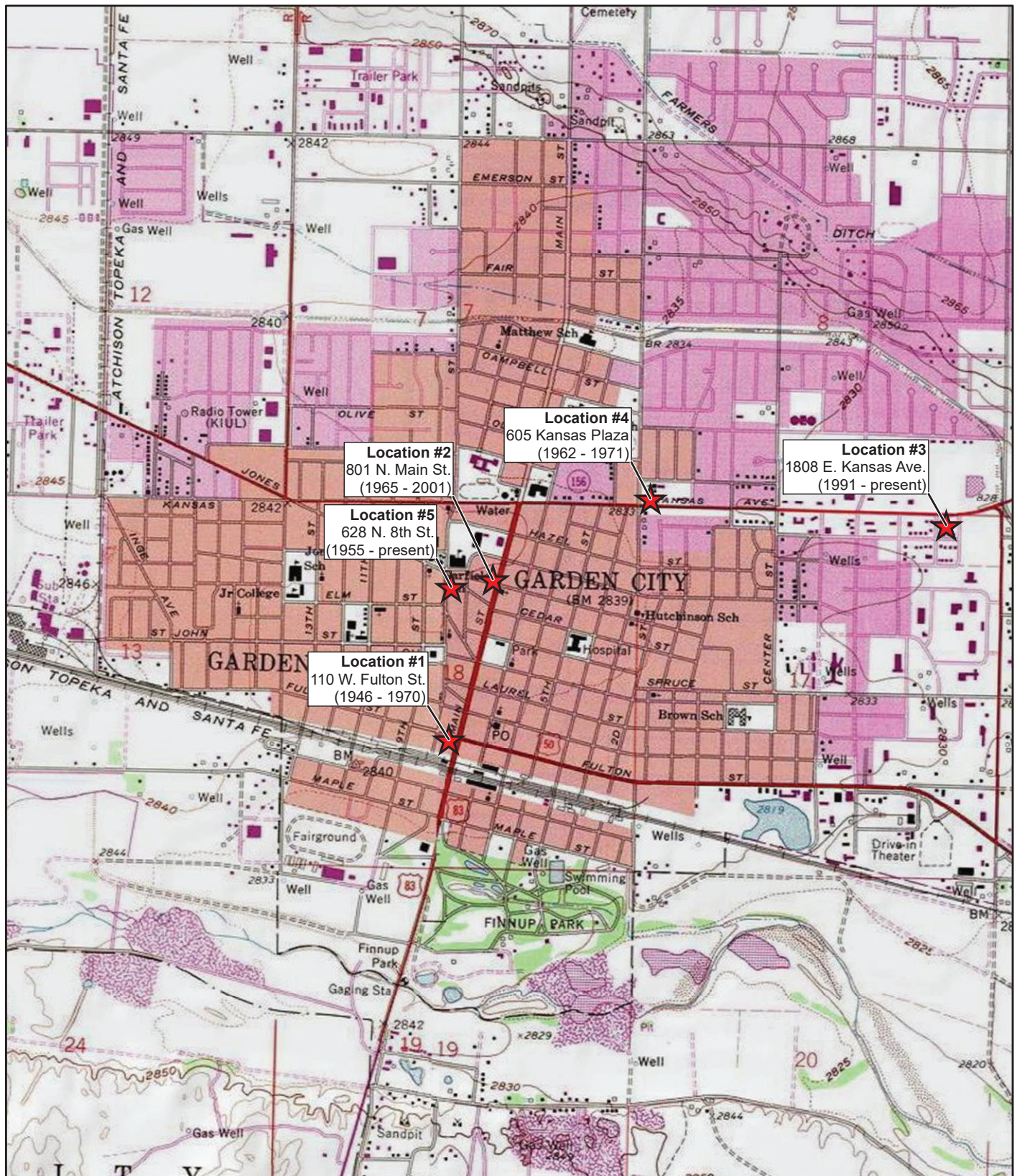
REFERENCES

- Agency for Toxic Substances and Disease Registry (ATSDR). 2019a. Toxic Profile for Tetrachloroethylene (PERC).
<https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=265&tid=48>
- ATSDR. 2019b. Toxicological Profile for Trichloroethylene (TCE).
[Trichloroethylene \(TCE\) | Toxicological Profile | ATSDR \(cdc.gov\)](https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=265&tid=48)
- Dun & Bradstreet. 2021. D&B Business Directory. https://www.dnb.com/business-directory/company-profiles.lisa_j_harris.38d3a308403321f63a4358fd0eb84d26.html
- Finney County. 2021. Geographic Information System (GIS) Map.
<https://finneycountygis.maps.arcgis.com/apps/webappviewer/index.html?id=e65e4c7887c9453cbdb769d037eac957>
- Finney County Rural Water District (RWD) 1. 2020. Water Quality Report.
<https://fcrwd1.myruralwater.com/water-quality-report>
- Kansas Department of Health and Environment (KDHE). 2022. Interest Finder Map.
<https://maps.kdhe.state.ks.us/keif/>
- Kansas Drinking Water Watch. 2021. <http://165.201.142.59:8080/DWW/KSindex.jsp>
- Kansas Geological Survey (KGS). 2014. Water Resources, Dakota Aquifer.
http://www.kgs.ku.edu/Publications/Bulletins/260/02_intro.html
- KGS. 2021a. KGS Geology, County Geologic Map for Finney County.
<http://www.kgs.ku.edu/General/Geology/County/def/finney.html>
- KGS. 2021b. Map of water wells. <https://maps.kgs.ku.edu/wwc5/>
- KGS 2021c. Kansas Oil and Gas. <https://maps.kgs.ku.edu/oilgas/index.html>
- The Kansas Life*. 2018. “Finney RWD 1, Largest Rural Water System in Western Kansas.” July.
<https://krwa.net/portals/krwa/lifeline/1807/Finney1.pdf>
- NewspaperArchive. 2021. <https://access-newspaperarchive-com.mcpl.idm.oclc.org/>
- ProQuest, LLC. 2021. Digital Sanborn Maps, 1867-1970. <http://sanborn.umi.com.mcpl.idm.oclc.org/>
- Spencer Preservation. 2011. Downtown Garden City, Historic Resources Survey. May.
- State Coalition for Remediation of Drycleaners (SCRD). 2007. *A Chronology of Historical Developments in Drycleaning*. November.
http://www.drycleancoalition.org/download/drycleaning-historical_developments.pdf
- Tetra Tech, Inc. (Tetra Tech). 2020. Kansas Dry Cleaner Inventory Report. March 12.
- Tetra Tech. 2021. Pre-Comprehensive Environmental Response, Compensation, and Liability Act Site Screening Site Screening Report, Five Dry Cleaner Sites, Garden City, Kansas. June 18.

- U.S. Census Bureau. 2022. Quick Facts: Garden City, Kansas.
<https://www.census.gov/quickfacts/fact/table/gardencitycitykansas,US/PST045221>
- U.S. Department of Agriculture (USDA). 1965. Soil Survey Finney County, Kansas.
https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/kansas/finneyKS1965/finneyKS1965.pdf
- USDA. 2021. Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>
- U.S. Environmental Protection Agency (EPA). 1991. *Guidance for Performing Preliminary Assessments Under CERCLA*. EPA/540/G-91/013. September.
- U.S. Geological Survey (USGS). 1983a. 7.5-minute topographic map East Garden City, Kansas.
- USGS. 1983b. 7.5-minute topographic map West Garden City, Kansas.

APPENDIX B

FIGURES



Garden City Dry Cleaner Sites
Garden City, Kansas

Figure 1
Site Location Map

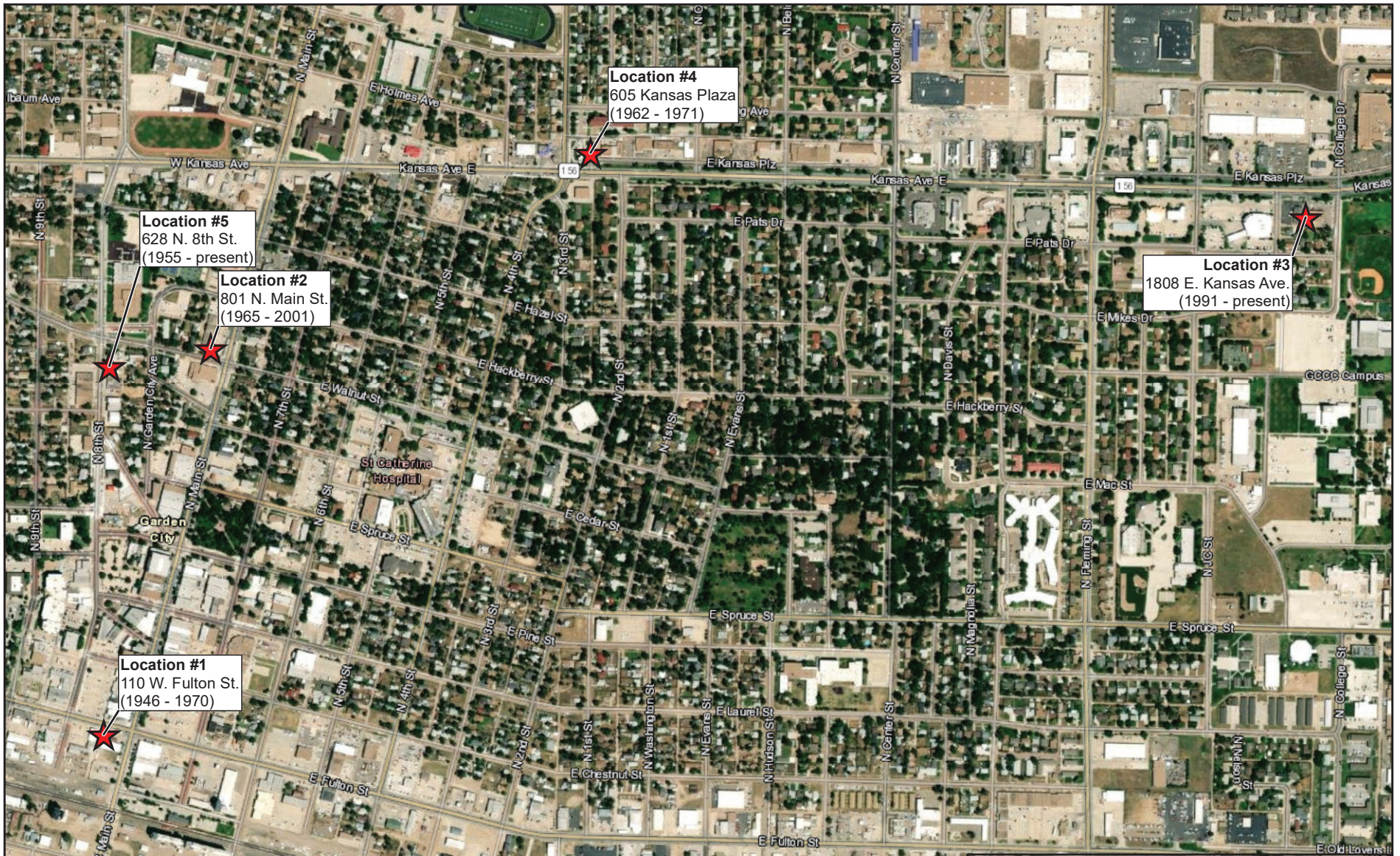


Source: USGS Garden City East, KS 7.5 Minute Topo Quad, 1983;
USGS Garden City West, KS 7.5 Minute Topo Quad, 1983

Date: 4/5/2022

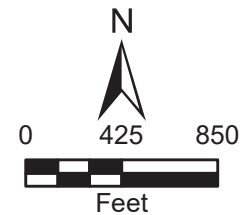
Drawn By: Nick Wiederholt

Project No: X903019F0065.005



Legend

★ Dry cleaner location



Garden City Dry Cleaner Sites
Garden City, Kansas

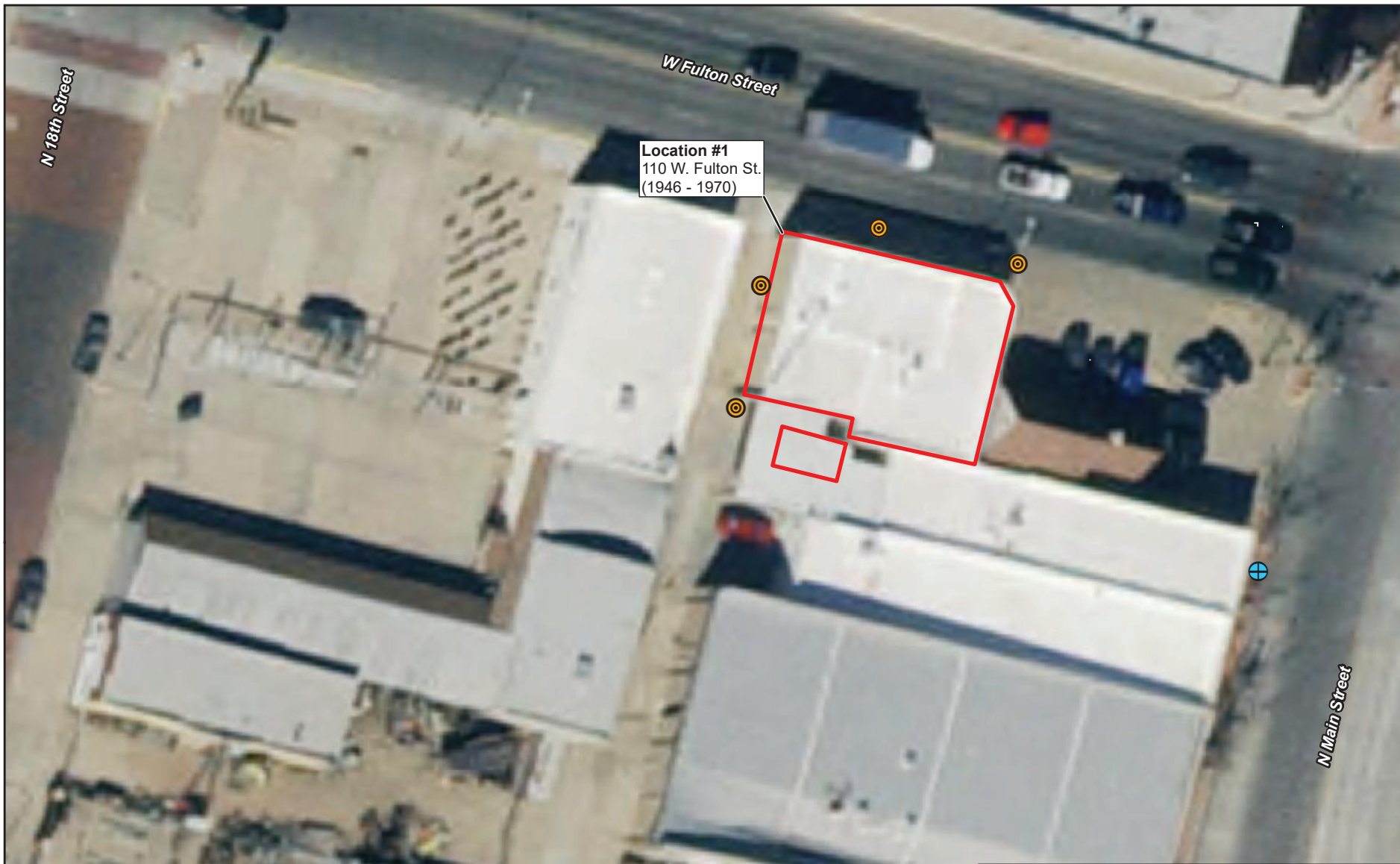
Figure 2
Site Layout Map



Date: 4/6/2022

Drawn By: Nick Wiederholt

Project No: X903019F0065.005



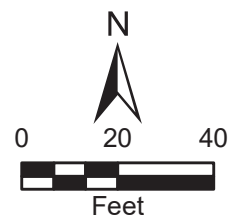
Legend

⊕ Proposed DPT groundwater sample location

⊙ Proposed soil gas sample location

□ Former dry cleaning facility

DPT Direct-push technology



Garden City Dry Cleaner Sites
Garden City, Kansas

Figure 3
Location #1 - Proposed Sample
Location Map



Date: 4/29/2022

Drawn By: Nick Wiederholt

Project No: X903019F0065.005



Location #2
801 N. Main St.
(1965 - 2001)

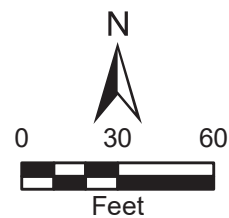
Legend

⊕ Proposed DPT groundwater sample location

⊙ Proposed soil gas sample location

▭ Former dry cleaning facility

DPT Direct-push technology



Garden City Dry Cleaner Sites
Garden City, Kansas

Figure 4
Location #2 - Proposed Sample
Location Map



Date: 4/29/2022

Drawn By: Nick Wiederholt




Project No: X903019F0065.005

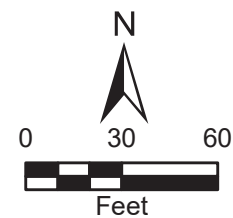
X:\G1903019F0065\005\Project\mxd\Figure4.mxd

Source: Kansas Data Access & Support Center, NG911 Imagery, 2018



Legend

-  Proposed DPT groundwater sample location
-  Proposed soil gas sample location
-  Existing dry cleaning facility
- DPT Direct-push technology



Garden City Dry Cleaner Sites
Garden City, Kansas

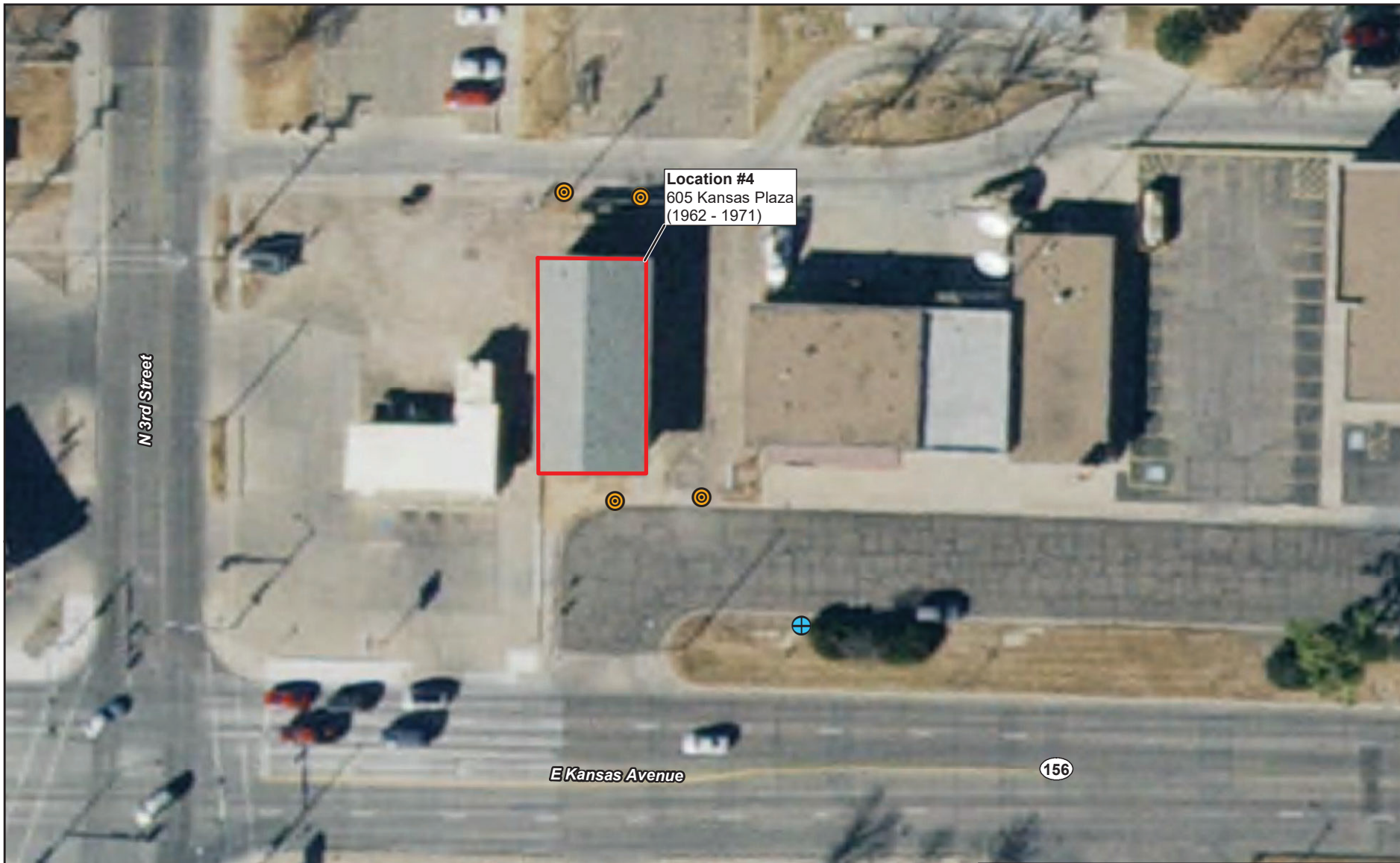
Figure 5
Location #3 - Proposed Sample
Location Map



Date: 4/29/2022

Drawn By: Nick Wiederholt

Project No: X903019F0065.005



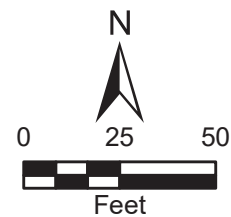
Legend

⊕ Proposed DPT groundwater sample location

⊙ Proposed soil gas sample location

▭ Former dry cleaning facility

DPT Direct-push technology



Garden City Dry Cleaner Sites
Garden City, Kansas

Figure 6
Location #4 - Proposed Sample
Location Map







Date: 4/29/2022

Drawn By: Nick Wiederholt

Project No: X903019F0065.005

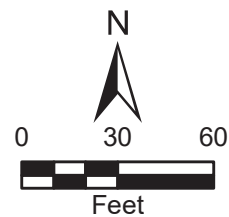


Legend

-  Proposed DPT groundwater sample location
-  Proposed soil gas sample location
-  Existing dry cleaning facility
-  Former dry cleaning facility

DPT Direct-push technology

Source: Kansas Data Access & Support Center, NG911 Imagery, 2018



Garden City Dry Cleaner Sites
Garden City, Kansas

Figure 7
Location #5 - Proposed Sample
Location Map



Date: 4/29/2022

Drawn By: Nick Wiederholt

Project No: X903019F0065.005